

IN THE CLAIMS:

Please amend the claims where indicated below:

13) 1. *(currently amended)* A vertical cavity surface emitting laser (VCSEL), comprising:

at least one quantum well having a depth of at least 40 meV, wherein said depth is defined as the difference between a valence band offset and a conduction band offset and wherein said at least one quantum well comprises of material that is free of indium and is comprised of GaAsSb;

barrier layers sandwiching said at least one quantum well; and  
confinement layers sandwiching said barrier layers.

2. *(previously amended)* The VCSEL of claim 1 wherein said barrier layers are comprised of GaAs and at least one of Al, N and P.

3. *(previously amended)* The VCSEL of claim 1 wherein said confinement layers are comprised of GaAs and at least one of Al, N and P.

15 4. *(original)* The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

5. *(original)* The VCSEL of claim 1 wherein said barrier layers are comprised of AlGaAs.

16 6. *(previously amended)* The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

7. *(previously amended)* The VCSEL of claim 1 wherein said at least one quantum well further comprises greater than 1% N.

B/14 6 = 8. *(previously amended)* The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

9. *(previously amended)* The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsN.

10. *(previously amended)* The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsN.

11. *(previously amended)* The VCSEL of claim 6 wherein said confinement layers are comprised of GaAsN.

12. *(previously amended)* The VCSEL of claim 6 wherein said barrier layers are comprised of GaAsN and said confinement layers are GaAsP.

13. *(previously amended)* The VCSEL of claim ~~14~~ wherein said at least one quantum well comprises >1% N.

6 = 8 14. *(original)* The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

4 15. *(original)* The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

16. *(previously amended)* The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

17. *(previously cancelled)*

18. *(previously cancelled)*

19. *(original)* The VCSEL of claim 1 wherein said quantum well is up to and including 50Å in thickness.

20. *(previously amended)* The VCSEL of claim 19 wherein said barrier layers are comprised of GaAs and at least one of Al, N and P.

21. *(previously amended)* The VCSEL of claim 19 wherein said confinement layers are comprised of GaAs and at least one of Al, N and P.

22. *(previously amended)* The VCSEL of claim 19 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsP.

23. *(previously amended)* The VCSEL of claim 19 wherein said barrier layers are comprised of AlGaAs and said confinement layers are comprised of GaAsP.

24. *(original)* The VCSEL of claim 19 wherein said barrier layers are comprised of AlGaAs.

25. *(original)* The VCSEL of claim 19 wherein said at least one quantum well comprises N.

26. *(original)* The VCSEL of claim 25 wherein said barrier layers are comprised of GaAsP.

27. *(original)* The VCSEL of claim 25 wherein said confinement layers are comprised of AlGaAs.

28. *(previously amended)* The VCSEL of claim 26 wherein said confinement layers are comprised of AlGaAs.

29. *(original)* The VCSEL of claim 27 wherein said barrier layers are comprised of AlGaAs.

30. *(original)* The VCSEL of claim 25 wherein said barrier layers are comprised of AlGaAs.

31. *(previously amended)* The VCSEL of claim 19 wherein said at least one quantum well comprises  $>1\%$  N.

32. *(original)* The VCSEL of claim 31 wherein said barrier layers are comprised of GaAsP.

33. *(original)* The VCSEL of claim 31 wherein said confinement layers are comprised of AlGaAs.

34. *(original)* The VCSEL of claim 32 wherein said confinement layers are comprised of AlGaAs.

35. *(original)* The VCSEL of claim 33 wherein said barrier layers are comprised of AlGaAs.

36. *(original)* The VCSEL of claim 31 wherein said barrier layers are comprised of AlGaAs.

37. *(currently amended)* A vertical cavity surface emitting laser (VCSEL), comprising:

b1 at least one indium free quantum well comprised of GaAsSb, wherein the depth of said quantum well is defined as the difference between a valence band offset and a conduction band offset;

GaAs<sub>2</sub> barrier layers sandwiching said at least one quantum well; and

GaAs confinement layers sandwiching said barrier layers.

38. *(previously amended)* The VCSEL of claim 37 wherein said barrier layers are comprised of GaAs and at least one of Sb, N, Al, P.

39. *(previously amended)* The VCSEL of claim 37 wherein said confinement layers are comprised of GaAs and at least one of Sb, N, Al, P.

40. *(previously amended)* The VCSEL of claim 37 wherein said confinement layers are comprised of AlGaAs and said barrier layers are comprised of GaAsN.

41. *(previously amended)* The VCSEL of claim 37 wherein said barrier layers are comprised of AlGaAs and said confinement layers are comprised of GaAsP.

42. *(previously amended)* The VCSEL of claim 37 wherein said barrier layers are comprised of AlGaAs.

43. *(previously amended)* The VCSEL of claim 37 wherein said at least one quantum well further comprises >1% N.

44. *(previously amended)* The VCSEL of claim 37 wherein said barrier layers are comprised of GaAsP.

45. *(previously amended)* The VCSEL of claim 37 wherein said confinement layers are comprised of AlGaAs. → 40

46. *(previously amended)* The VCSEL of claim 37 wherein said confinement layers are comprised of AlGaAs. → 40

47. *(previously amended)* The VCSEL of claim 37 wherein said quantum well is up to and including 50 Å in thickness.

48. *(currently amended)* A vertical cavity surface emitting laser (VCSEL), comprising:

at least one quantum well consisting essentially of GaAsSb, wherein the depth of said quantum well is defined as the difference between a valence band offset and a conduction band offset;

GaAs barrier layers sandwiching said at least one quantum well; and  
AlGaAs confinement layers sandwiching said barrier layers.

49. *(previously amended)* The VCSEL of claim 48 wherein said barrier layers are further comprised of GaAsP.

50. *(previously amended)* The VCSEL of claim 48 wherein said barrier layers are further comprised of GaAsN.

51. *(previously amended)* The VCSEL of claim 48 wherein said at least one quantum well further comprises >1% N.

52. *(original)* The VCSEL of claim 51 wherein said barrier layers are comprised of GaAsP.

53. *(original)* The VCSEL of claim 51 wherein said barrier layers are comprised of AlGaAs.

54. *(original)* The VCSEL of claim 48 wherein said quantum well is up to and including 50 Å in thickness.

55. *(original)* The VCSEL of claim 54 wherein said barrier layers are comprised of GaAsP.

56. *(original)* The VCSEL of claim 54 wherein said barrier layers are comprised of AlGaAs.

57. *(previously amended)* The VCSEL of claim 54 wherein said at least one quantum well further comprises >1% N.

---